

THURSDAY, APRIL 1, 1886

A FISHERY BOARD FOR ENGLAND

IN the House of Commons, on March 6, Sir Edward Birkbeck pressed upon the consideration of the Government the advisability of taking immediate steps to give effect to the recommendations of the Trawling Commission. Few men could have handled the question with so much knowledge and force. Sir E. Birkbeck pointed out that there is urgent need for a central department for the administration of business connected with sea-fisheries, and in supporting his appeal exhibited a detailed knowledge of the clumsy state of the existing arrangements and a wide acquaintance with the statistics and conditions of fishing industries. He pointed out that Scotland and Ireland possessed each a Fishery Board with considerable powers, complete organisation, and liberally supplied with public money. He recommended that a Fishery Board for England should be established which should unite the powers and functions now distributed among the Government Offices. The duties of the Board suggested were that it should collect detailed statistics as to the amount of fish taken, its value, and the number of vessels and hands employed; that it should be responsible for the registration of fishing-vessels; and should be able to recommend legislation when necessary or advisable. The author of the motion further recommended that the Board should divide the English coast into Fishery Districts, each with its Fishery Officer, and that the supreme control of the salmon and other inland fisheries should also be vested in the new authority. Mr. Mundella replied that the Government accepted the principle of the motion, and were about to carry it out by constituting a Committee of the Board of Trade which should be responsible for matters connected with the fisheries, but reminded the House that a Bill would have to be passed to transfer the powers at present vested in the Home Office to the new sub-department.

The present Government are thus pledged to the formation of what is practically an English Fishery Board. If a Fishery Board is useful and valuable it is a surprising fact that Ireland and Scotland have long enjoyed an institution which is wanting in England. It would seem that so much fear exists lest the smaller constituents of the United Kingdom should be neglected or unjustly treated that England is in danger of suffering from complete maternal self-sacrifice. But now that the deficiency is to be remedied it is necessary to consider carefully how the new institution can best be constructed. It is easier to provide good arrangements in the course of construction than to remedy mistakes afterwards. Sir Edward Birkbeck pointed out what functions he thought the new department should undertake. Mr. Mundella refrained from entering into details, only mentioning the subject of floating grog-shops as one requiring immediate attention. Sir E. Birkbeck's recommendations are apparently founded on his knowledge of the constitution of the Irish and Scottish Boards, but he did not enter upon the question of scientific work. He thought that the Board should include a practical element. But the question of what "practical" means depends largely on the

particular practice to be carried on. The ordinary interpretation of the word would mean that some member of the Board or Committee should be a man who had been personally engaged in the fishing industry. We have miners in the House of Commons, and doubtless an intelligent fisherman would be useful on a Fishery Board. But the Trawling Commission recommended that money should be granted to the Scottish Board for the purpose of conducting scientific investigations, and that a central authority for the United Kingdom should, when created, also carry on scientific work and collect fishery statistics. For scientific work the practical element means men of science to do the work. The principle is now recognised by several examples. A Professor of Zoology was appointed to the Trawling Commission, and another by the influence of the Scottish Meteorological Society, to the Scottish Fishery Board. A training in science does not always include a training in business details. But in a Fishery Board, and especially in its scientific work, the purely administrative and business work are of subordinate importance compared with the necessity that the inquiries and actions of the department should be carried on by men who have special knowledge of animals, and particularly of marine life. This principle is recognised in other countries. The Fishery Commissioner of the United States is a distinguished man of science, and his colleagues and many of his subordinates are trained scientific men. The Commission for the Investigation of the German Seas is composed of distinguished men who are students and teachers of biology or physics. In Norway and Holland the same thing occurs. It is to be hoped that we in England shall not commit the error of entrusting the affairs of a Fishery Department entirely to men whose only training has been legal or commercial. The mere collection of fishery statistics can only be efficiently carried out, or at least controlled and directed, by men of some scientific training. Fishermen themselves, as was abundantly shown during the inquiries of the Trawling Commission, are too uneducated to estimate truly the meaning of the things they see. For this reason their views and statements must be subject to the criticism of exact science. As the Trawling Commission concluded, it is impossible to discover the causes or measure the fluctuations of the fisheries in the absence of a proper system of fishery statistics and scientific observations. The new laboratory now being founded by the Marine Biological Association will form an important central station for the accurate investigation of fishery questions, and, with the co-operation of smaller and sometimes temporary laboratories at other parts of the coast, some real knowledge of the conditions of our fisheries may be obtained.

As an instance of the care and knowledge which must be devoted to inquiries concerning fishery matters, we may point out that in the Second Annual Report of the Scottish Fishery Board, a fish was described as of a species new to the northern region of the German Ocean, which really belonged to a species long known to be common in the district where it was taken. We believe that only two herring-spawning beds off the coast of Britain are at all accurately known. It is manifestly advisable that our knowledge of the herring, perhaps the most important of our food-fishes, should include an

exact knowledge of all the spawning beds round the coast. The assertions of fishermen would be a guide to the acquisition of this knowledge, but it would require scientific men to ascertain the position and extent of the spawning areas, and properly mark them out on a chart. A large number of matters connected with the fisheries have not yet begun to receive attention even in Scotland. The spawn of the sprat is still entirely unknown. The smelt fisheries have never yet, we believe, been examined, and complaints are made in some places that the number of smelt has been seriously diminished by the capture of the young in tidal bag-nets. Statistics of the smaller fisheries ought to be obtained, as well as of the larger, for in many cases these smaller fisheries could be largely developed by intelligent methods. As we have already said, the collection of these statistics requires zoological knowledge, for the same species often bears several local names, which would be put down by an untrained officer as belonging to as many different kinds of fish. What is wanted is a proper division of labour. It does not require a biologist to draw up statistics concerning boats and crews, or carry on purely administrative work. But a large proportion of the work which a Fishery Board ought to carry out is really scientific work, and can only be done by men of science.

Sir Edward Birkbeck very properly included among the functions of the proposed authority that of advising legislation when necessary. The public have learnt by several examples how dangerous it is to legislate in fishery matters, apart from the mere introduction of police regulations, without the basis of results established by experiment. In many cases the laws passed have been themselves experiments, but as the conditions under which they were carried out were complicated, and not properly studied, little accurate knowledge has been gained from them. The Scottish Fishery Board is about to try an extensive experiment with regard to beam trawling, prohibiting that method of fishing in certain defined areas. The experiment is worth trying, even at the cost of temporary inconvenience to the fishery industry. But in order to render such an experiment fruitful, it would be necessary to make a detailed and exact investigation of the areas selected. It is doubtful whether the organisation of the scientific department of the Scottish Board is yet in a position to make this investigation in a sufficiently complete manner. But there can be no doubt that such experiments should be repeatedly made on a sufficiently large scale; and on their results legislation may be based with some safety. Without them it is better not to legislate at all. No one is at present in a position to say how far artificial propagation can be applied to sea fishes with results economically successful. In America even the extensive resources of the Fish Commission have not yet settled this question. In view of the annually increasing efficiency in the means of capture of marine fish, it would be certainly wise to lose no time in at least ascertaining by suitable experiments, if it be at all possible to add by human intervention to the supplies of sea fishes provided by unaided nature. The harvest of the sea has been gathered by man for ages; the time may yet come when it will also be sown by human foresight.

Moreover, beyond and above the necessity for practical

scientific work, there is another advantage which inevitably follows from the association of scientific investigation with the work of a Fishery Board. The results include additions to abstract scientific knowledge, and facilitate in many ways purely scientific researches. The extent to which biology especially has been enriched by work primarily intended to develop the fisheries is well known. It is not to the credit of the United Kingdom that this remark applies chiefly to foreign countries. The valuable aid which the Fish Commission renders to biological science in America can scarcely be too highly estimated. The attention which has been paid to the questions concerning the breeding of fishes has advanced our knowledge of teleostean embryology much more rapidly than would have been possible from purely academic work. The scientific public, then, should insist that exact science be represented in the English Fishery Department, by whatever title it may be called. At least one leading official of the department should be a biologist of recognised standing, who could properly organise the scientific inquiries which must necessarily be undertaken. It would be well if at least one other member were a meteorologist or a physicist. It is inevitable that the new department, if it is to be of any use at all, must apply to men of science for counsel and assistance, and this assistance can most efficiently be rendered by men of science who are members of the administrative body. In this way the organising and directing power of one or possibly two scientific authorities should be secured for the department, but, in addition to this, a staff of subordinates trained as scientific naturalists is absolutely necessary to carry on the actual work of inquiry and observation. These officers must be really competent men, or their services will be worse than useless. They should also be *permanently* employed, and not asked casually to undertake an inquiry. No doubt the department should have the power and the necessary funds to retain the services from time to time of the most highly-skilled men of science to carry on special investigations in connection with questions which arise. But every man of science knows that constant and permanent occupation in a special branch of inquiry, without uncertainty as to pecuniary conditions or undue anxiety to obtain a striking result in a short space of time, is the most favourable condition for the production of really trustworthy and progressive scientific work. It is on this account that we should urge the formation of a staff of permanently employed scientific investigators similar to the staff of the Geological Survey.

For in truth what that important State enterprise has effected for the economic exploration of the land of the British Islands is *mutatis mutandis* very much what has to be done for their seas. The parallel may indeed be pushed pretty far. For just as the deeper search for minerals, such as coal and iron—and even water—has now to depend on accurate geological knowledge when the resources of superficial prospecting are played out, so we may come to have to take seriously into account the conditions and place of production of the fish which we complacently content ourselves with hauling up in our nets. The Fishery Department has hitherto been in a tolerably chaotic state. But at any rate it summoned to its aid the most eminent biologist of the day. It would

be an extraordinary anomaly if a carefully considered organisation discarded at starting the scientific help on which it will eventually have to rely.

ELECTRIC LIGHTING LEGISLATION

IT is not so many years ago that our only notion of practical electric lighting was the arc lamp. Experiments had indeed been made for many years (commencing as far back as in the year 1845) in the direction of incandescent lighting,—experiments where platinum and platinum-iridium wires had been made incandescent, where carbon in the form of sticks or pencils having very low resistance had been made incandescent. Indeed, King's experiments in the year 1845 had been made with the carbon pencil, and a proposition had been put forward for preserving these carbons from combustion by their use in closed vessels, in which either a vacuum was formed, or a preservative atmosphere, such as nitrogen, was introduced. But all these attempts at incandescent lighting were, as has been said, in a purely experimental condition, and the arc light was the only one in practical use.

At that time it was said that even if a satisfactory incandescent lamp could be made there was still, even for separate installations, the difficulty of dividing the electric current, and as regards anything like a distribution of electricity from a central source there was a further commercial difficulty in the great cost of the conductors suited to carry the needed current.

This state of things was followed by contradictory rumours of what Mr. Edison was doing in the United States. First that he had succeeded in producing a durable incandescent lamp; then that he had utterly failed; then that there was hope that he was about to succeed with the lamp, but he felt he must abandon any attempt to divide the current; and then similar contradictory rumours as to the possibility of supply from a central source.

At length, some six or seven years ago, it became undoubted that Edison had devised an enduring lamp, having a filament of high resistance; that the current could be readily divided to these lamps by placing them in parallel arc; and that, by the raising of the electromotive force to that needed for the working of the lamps, the mains could be reduced to within reasonable limits of cost.

After some little time had elapsed no doubt there was a very large amount of commercial speculation entered into in connection with electric lighting,—a most unfortunate thing for those who seriously desired its development, a most unfortunate thing for private persons who wished to adopt electric lighting.

The promoters of electric lighting had thought that, if they could show to Parliament they were prepared to undertake the lighting of a district, they would obtain the Parliamentary sanction needed in the case of railways, docks, water, gas, and other industrial undertakings, and under proper precautions granted by Parliament to those who were willing to subscribe capital. But at this point the Board of Trade intervened, under their then President, Mr. Joseph Chamberlain, and setting all precedent at defiance, obtained the passing of their Electric Lighting Act of 1882, an Act jocosely called "An Act to *facilitate* and regulate the supply of electricity for lighting and other purposes."

From the title of this Act any one would imagine that, while Edison had devoted years of his life to making electric lighting by incandescence possible, Mr. Chamberlain, appreciating these efforts, had stepped forward with a law which was to be generally applied; and that the labours of the statesman were to be in continuation of those of the philosopher in developing electric lighting. "Facilitate," on turning to Ogilvie's dictionary, one finds "to make easy or less difficult," "to free from difficulty or impediment."

Mr. Chamberlain's interpretation of the word "facilitate," as one gathers that interpretation from the 27th section of the Act, confirmed by four years' experience of its effects, is a very different one. "Facilitate" with him must mean "to make difficult or less easy," to "encumber with difficulty or impediment, or to add to it." The 27th section, which is set out *in extenso* in a footnote, may be briefly summarised as follows:—After the expiration of twenty-one years (or even a shorter period if the opponents can succeed in getting its insertion in a special Act), any local authority, corporation, or local board, or sanitary authority in whose district the undertaking is situated, may insist upon the undertakers selling to such authority the undertaking, and if they cannot agree as to the price, as, of course, they would not (for one does not agree in cases of confiscation), the value is to be determined by arbitration; but the value is only to be the fair market value of the lands, buildings, works, plant, and material at the time of the purchase, but nothing is to be added in respect of "compulsory purchase," or of "good-will," or of profits, past, present, or prospective. Be it observed, however, there is no obligation on the part of the local authority to purchase if the concern does not pay at the end of twenty-one years. The local authority may forego the right to purchase. But then, still further to "facilitate" the investment of capital in electric lighting, the local authority at the end of a further seven years is again invested with the option, and so on from seven years to seven years.

At an interview between the parties something of this sort can well be imagined:—Mr. Town Clerk to the Chairman of the Company: "The end of the twenty-one years is coming, are you making a profit?" "We have begun during the last few years to pay a small dividend—3 per cent." "Oh! we can get 10 per cent. out of the extension of our gas-works. We sha'n't buy your electric light undertaking." The twenty-seventh year comes. Mr. Town Clerk and the Chairman again have an interview. By this time electricity has been appreciated; gas is going out of fashion, and the electric lighting shareholders are beginning to get some return for their years of labour, of no dividend, and of low dividend.

Chairman: "We made last year 7 per cent., and the year before 6."

Town Clerk: "Do you expect to continue 7 per cent. or do you think it will increase?"

"Well, we have now so many applications for the electric light in substitution of gas, that in frankness I must say I believe the dividend will not only be maintained but will be augmented, and within a few years will reach the maximum allowed."

"Thank you, Mr. Chairman. After the next council meeting you will receive a notice that the corporation in-